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EXAMINER

LEUNG, JENNIFER A

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/824,332

Applicant(s)

ITO ET AL.

Examiner

Jennifer A. Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15,18-23,25-50 and 52-57 is/are pending in the application.
- 4a) Of the above claim(s) 26-36 and 54 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15,18-23,25,37-50,52,53 and 55-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 15,18-23,25-50 and 52-57 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 6, 2003 has been entered.

Response to Amendment

2. Applicant's Amendment filed on February 6, 2003 (paper #13) has been received and carefully considered. Claims 1-14, 16, 17 and 24 were cancelled in paper #10, and claim 51 was cancelled in paper #13. Claims 56 and 57 were added in paper #10. Claims 26-36 and 54 are withdrawn from consideration, being drawn to a non-elected invention in paper #8. Claims 15, 18-23, 25, 37-50, 52, 53 and 55-57 remain under prosecution in this application.

Specification

3. The disclosure is objected to because of the following informalities:
- On page 27, line 6: "baffles 122" should be changed to -- baffles 124 -- for consistency in terminology, as set forth on page 25, line 19.
 - On page 27, line 10: "regenerator 144" should be changed to -- regenerator 114 -- for consistency in terminology, as set forth on page 25, line 16.
4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware. Appropriate correction is required.

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Claim Objections

5. Claims 37-39 are objected to because of improper claim dependency:
- Claim 37 improperly depends on claim 25, since the preamble is drawn to "The fluidized catalytic cracking unit..." of the non-elected invention.
 - Claim 38 improperly depends on claim 25, since the preamble is drawn to "The fluidized catalytic cracking unit..." of the non-elected invention.
 - Claim 39 improperly depends on cancelled claim 8.

Appropriate correction is required.

6. Claims 1 and 20 are objected to because of the following informalities:
- In claim 1, "and" should be omitted (beginning of line 5; end of line 8).
 - In claim 20, "and" should be omitted (end of line 8; end of line 11; end of line 18). Also, "steam splitter" should be changed to -- stream splitter -- to correct for a typographical error. Also, "wherein as" (line 19) should be changed to -- wherein --, for proper grammatical form.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 15, 18-23, 25, 37-50, 52, 53 and 55-57 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 15, 20, 41 and 45, it is unclear as to what angle is intended by "a

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forward acute angle", since it is unclear as to the relationship of said angle to the other elements of the apparatus. The Examiner suggests indicating a point of reference, (i.e., a horizontal axis, parallel to the axial flow direction).

With respect to claim 19, it is unclear as to where, "at least one of the dimensions converges in a downstream direction..." is located in the specification and drawings, and whether applicants intended to recite, "at least one of the dimensions diverges in a downstream direction..." for consistency with the specification and drawings.

With respect to claim 21, it is unclear as to the relationship between "a second inlet" in line 1 and "a second inlet" set forth in claim 20, line 14.

With respect to claim 22, it is unclear as to how the recitation of, "the second inlet comprises a sparger" further limits the structural limitation of, "which second inlet is a sparger" set forth in claim 20, line 16.

With respect to claim 25, "the spray distributor fluid passageway" lacks proper positive antecedent basis.

With respect to claims 37 and 38, the recitation of "The fluidized catalytic cracking unit according to claim 25..." in the preamble lacks proper positive antecedent basis, and is further directed to the subject matter of the non-elected invention.

With respect to claim 41, "the petroleum feed" (lines 10, 11) and "the atomization fluid" (lines 10-11) lack proper positive antecedent basis.

With respect to claim 42, it is unclear as to the relationship between "an atomization fluid" in lines 1-2 and "the atomization fluid" set forth in claim 41, lines 10-11.

With respect to claim 45, it is unclear as to how the recitation of, "the atomization fluid

passageway outlets have a forward acute angle greater than 60° ” further limits the structural limitation of, “the atomization fluid passageway outlets have a forward acute angle greater than 60° ” set forth in claim 41, lines 7-8.

With respect to claims 48 and 49, the language of the claim is directed to a method limitation which renders the claim vague and indefinite as it is unclear as to what structural elements the applicants are attempting to recite by, “the spray distributor fluid comprises...” since “the spray distributor fluid” is not considered an element of the apparatus.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 41, 42 and 44-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Metrailler et al. (U.S. 2,952,619).

With respect to claims 41 and 45, Metrailler et al. (FIG. 1, 2; column 2, line 55 to column 3, line 27; Table 1) disclose an apparatus comprising:

- a. A central passageway **30** for allowing a fluid to be atomized (i.e., hydrocarbon oils) to pass there through;
- b. An outlet (i.e., terminal portion **35**) comprising an atomization zone and a spray distributor positioned downstream from and in fluid communication with said central passageway **30**, which distributor is configured to promote a predetermined spray pattern;
- c. A plurality of atomization fluid passageways (i.e., channels **33**) fluidly communicating with passageway **30** via atomization fluid passageway outlets (i.e., constricting

passageways **34**), wherein outlets **34** have a forward acute angle greater than 60° and are positioned concentrically about a perimeter of passageway **30** (i.e., as disclosed in column 3, lines 3-19, with emphasis added, "... the film is cut at an angle of about 90° by *one or more jets of stream* at a velocity of 250 ft./sec., thus shearing and atomizing the oil into relatively uniform fine droplets." Also, in Table 1, the "Cutting Angle of Gas Jet" may lie between 55° - 105°, or more preferably and angle of 65° - 90°); and

- d. A heating zone configured to promote heat exchange from the petroleum feed and the atomization fluid before the petroleum feed and the atomization fluid mix (i.e., "Steam supplied to channel **33** at a temperature of 350 °F helps to maintain the temperature of the oil stream in addition to serving as a shearing gas." column 2, lines 66-69).

With respect to claim 42, Metrailler et al. (FIG. 2) disclose an inlet for the atomization fluid (i.e. the inlet to passageway **33**, illustrated on the left side of the apparatus) positioned upstream from the atomization fluid passageway outlet **34**.

With respect to claim 44, Metrailler et al. (FIG. 2; column 2, line 69 to column 3, line 2) disclose passageway **30** comprises a stream splitter (i.e., flow restricting structure **36** having a grooved circumferential surface **37**) positioned within the passageway **30** upstream from the position **34** at which the atomization fluid passageway exits.

With respect to claim 46, Metrailler et al. (FIG. 2) disclose passageway **30** has a circular cross-section (i.e., being defined by an annular chamber **31**) and wherein the atomization fluid passageway outlets **34** are positioned concentrically about the central passageway **30**.

With respect to claim 47, Metrailler et al. (FIG. 2) disclose at least one of the two dimensions of the central passageway **30** cross-section converges in a downstream direction

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along at least a portion of its length (i.e., as disclosed in column 3, lines 20-27, "Other structures, apparent to those skilled in the art, such as a cone with its apex oppositely directed to the flow of oil, may be readily employed.").

Instant claims 41, 42 and 44-47 structurally read on the apparatus of Metrailler et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 15, 18-23, 25, 37-38, 40-50, 52, 53 and 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Piotter (U.S. 4,931,171).

With respect to claims 15, 18-22, 52, 53, 56 and 57 Piotter (FIG. 6; column 18, line 31 to column 19, line 31) discloses an apparatus comprising:

- a. A central passageway (i.e., defined by walls of mixing zone **200** and upper surface of

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- nozzle **224**), allowing a fluid to pass there through (i.e., fuel; column 4, lines 36-45);
- b. An atomization zone (i.e. defined by lower surface of nozzle **224**) positioned downstream from and in fluid communication with said central passageway;
 - c. A plurality of atomization fluid passageways **216, 218, 220** fluidly communicating with the central passageway via atomization fluid passageway outlets (i.e., apertures **222**), positioned concentrically about a perimeter of the central passageway;
 - d. A heating zone configured to promote heat exchange between the central passageway and the plurality of atomization fluid passageways **216, 218, 220**, wherein the heating zone is positioned upstream from the atomization zone, (i.e., "air or air and off gas is introduced through line **216**, passes through annular chamber **218** in *indirect heat exchange* with the combustion zone..."; column 18, lines 58-63);
 - e. A mixing zone **200** comprising a first inlet (i.e., fuel introduction conduit **208**) for a fluid to be atomized and a second inlet (i.e., air introduction means **210**) positioned upstream of said central passageway from said atomizing fluid passageway outlets **222**, which mixing zone **200** is in fluid communication with said central passageway; and
 - f. A stream splitter (i.e., barrier means **212**) positioned within the central passageway upstream from the atomization fluid passageway outlets **222**;

wherein at least one of the two dimensions of the central passageway cross-section converges in a downstream direction along at least a portion of its length (i.e., converging section as defined by upper surface of nozzle **224**); and wherein at least one of the two dimensions of the atomization zone cross-section diverges in a downstream direction along at least a portion of its length (i.e., diverging section defined by lower surface of nozzle **206**).

Piotter further discloses the second inlet **210**, "can be any of the well known means for creating a *swirling annular stream of air*, such as *an annular ring* with fins at appropriate angles, *a plurality of peripheral, tangential introduction ports or the like*," thereby mixing the fluid streams via a combination of axial and radial flow, inherent of the swirling (emphasis added; column 18, lines 40-44). Although Piotter does not identify such means as a "sparger", the means as disclosed functions substantially as the recited "sparger... comprised of a cylindrical conduit containing a plurality of sparger fluid passageways", and thus meets the claim.

In the embodiment of FIG. 6, air is used as the atomization fluid. However, Piotter further suggests the use of steam as an equivalent to air (column 13, lines 7-12). In any event, the apparatus meets the claims, since selection of either air or steam for the atomization fluid is merely a matter of intended use, and the apparatus is structurally capable of utilizing either fluid.

Regarding the recitation of, "a heating zone... configured to superheat said steam," the specification (page 2, lines 16-18) states "The heat exchange takes place upstream of the atomizing means, in at least on heat exchange means which may comprise, for example, a heat conductive apparatus or body having a plurality of fluid passage means therein." Therefore, the apparatus of Piotter, which must comprise "a heat conductive apparatus or body" to enable the disclosed indirect heat exchange, would be inherently capable of functioning as a "steam superheater", depending on the choice of atomizing fluid and the relative temperatures of the incoming atomizing fluid and feed streams, respectively.

Piotter is silent as to the angle of the atomizing fluid passageway outlets **222**. In any event, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select an appropriate angle (i.e., a forward angle measurement greater

than 60°) for the outlets in the apparatus of Piotter, on the basis of suitability for the intended use and absent showing any unexpected results thereof, since the specific angle degree is not considered to confer patentability to the claim since the precise angle would have been considered a result effective variable by one having ordinary skill in the art. Also, it is noted that the present specification sets forth on page 18, lines 18-20, that the claimed angle measurement, is at best, a preferred limitation. As such, without more, the claimed angle measurement cannot be considered "critical". Accordingly, one having ordinary skill in the art would have routinely optimized the degree of the forward angle in the system to obtain the desired fluid flow characteristics, *In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With respect to claims 23, 25, 37, 38, and 40, Piotter discloses both dimensions of the central passageway converge in the downstream direction (i.e., converging upper section of nozzle **224**; FIG. 6), wherein the converging dimension of the passageway and the diverging dimension of the atomization zone (i.e., diverging lower section of nozzle **224**) are co-planar.

With respect to claims 41 and 45, Piotter (FIG. 6; column 18, line 31 to column 19, line 31) discloses an apparatus comprising:

- a. A central passageway (i.e., defined by walls of mixing zone **200** and upper surface of nozzle **224**), allowing a fluid to pass there through (i.e., fuel; column 4, lines 36-45);
- b. An outlet comprising an atomization zone (i.e., defined by lower surface of nozzle **224**) and a spray distributor (i.e., defined by nozzle **206**) positioned downstream from and in fluid communication with said central passageway, which spray distributor **206** is

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configured to promote a predetermined spray pattern;

- c. A plurality of atomization fluid passageways **216**, **218**, **220**, fluidly communicating with the central passageway via atomization fluid passageway outlets (i.e., apertures **222**), and
- d. A heating zone configured to promote heat exchange from a petroleum feed and the atomization fluid before the petroleum feed and the atomization fluid mix (i.e., "air or air and off gas is introduced through line **216**, passes through annular chamber **218** in *indirect heat exchange* with the combustion zone..."; column 18, lines 58-63).

Piotter is expressly silent as to the angle of the atomizing fluid passageway outlets **222**. In any event, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select an appropriate angle (i.e., a forward angle measurement greater than 60°) for the outlets in the apparatus of Piotter, on the basis of suitability for the intended use and absent showing any unexpected results thereof, since the specific angle degree is not considered to confer patentability to the claim since the precise angle would have been considered a result effective variable by one having ordinary skill in the art. Also, it is noted that the present specification sets forth on page 18, lines 18-20, that the claimed angle measurement, is at best, a preferred limitation. As such, without more, the claimed angle measurement cannot be considered "critical". Accordingly, one having ordinary skill in the art would have routinely optimized the degree of the forward angle in the system to obtain the desired fluid flow characteristics, *In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With respect to claim 42, Piotter (FIG. 6; column 18, lines 38-44) further disclose a

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second inlet (i.e., air introduction means **210**) for the atomization fluid, positioned upstream from the atomization fluid passageway outlet **222**.

With respect to claims 43 and 55, Piotter discloses a second inlet (i.e., air introduction means **210**) which "can be any of the well known means for creating a *swirling annular stream of air*, such as *an annular ring* with fins at appropriate angles, *a plurality of peripheral, tangential introduction ports or the like*," thereby improving the mixing of the fluid streams via a combination of axial and radial flow, inherent of the swirling motion (emphasis added; column 18, lines 40-44). Although Piotter does not specifically identify such means as a "sparger", the means as disclosed functions substantially as the recited "sparger... comprised of a cylindrical conduit containing a plurality of sparger fluid passageways", and therefore meets the claims.

With respect to claim 44, Piotter (FIG. 6; column 18, lines 44-56) discloses the central passageway comprises a stream splitter (i.e., barrier **212**) positioned within the passageway upstream from the position **222** at which the atomization fluid passageways exits.

With respect to claim 46, Piotter (FIG. 6) further discloses the central passageway has a circular cross-section, wherein the atomization fluid passageway outlets **222** are positioned concentrically about the central passageway.

With respect to claim 47-50, Piotter discloses at least one of the two dimensions of the central passageway converges in a downstream direction along at least a portion of its length (i.e., converging upper section of nozzle **224**; FIG. 6), and at least one of the two dimensions of the spray distributor **206** diverges in a downstream direction along at least a portion its length (i.e., diverging lower section of nozzle **206**; FIG. 6). As illustrated, the converging dimension of the central passageway and the diverging dimension of the distributor are co-planar.

Response to Arguments filed April 2, 2003

10. Applicant's arguments with respect to claims 15, 18-23, 25, 37-40, 43, 48-50, 52, 53 and 55-57 have been considered but are moot in view of the new grounds of rejection.

11. Applicant's arguments with respect to the rejection of claims 41, 42 and 44-47 in view of Metrailler et al. '619 have been fully considered but they are not persuasive.

As stated on page 5, last paragraph, Applicants disagree with the Examiner in that Applicant's invention "is designed so that heat transfers from the liquid oil to the steam in the heating zone." Alternatively, "Metrailler et al. teach that the steam helps maintain the temperature of the oil." The Examiner agrees that Metrailler et al. teaches that the steam helps maintain the temperature of the oil. However, the language of claim 41 (lines 10-11) recites,

A heating zone configured to promote heat exchange from the petroleum feed and the atomization fluid before the petroleum feed and the atomization fluid mix.

which does not read that heat is exchanged "from" the petroleum feed "to" the atomization fluid, and therefore, applicant's arguments are not commensurate with the language of the claims.

Furthermore, regarding applicant's response that, "One having ordinary skill in the art reading Metrailler et al., ... would not be led to create an apparatus comprising the instantly claimed heating zone with a 'built-in' *steam superheater*," (emphasis added; page 6, lines 1-3), the Examiner asserts that the apparatus of Metrailler et al. structurally meets the claims, since the relative temperatures of the heat exchange media (i.e., the steam and oil feed) are a matter of intended use, since the temperature of the feed streams is considered to be a process limitation, which carries no patentable weight in apparatus claims. As defined in the specification, page 2, lines 16-18, "The heat exchange takes place upstream of the atomizing means, in at least one

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heat exchange means which may comprise, for example, a heat conductive apparatus or body having a plurality of fluid passage means therein." Therefore, the apparatus of Metrailer et al., which inherently comprises "a heat conductive apparatus or body" to enable the disclosed transfer of heat from the steam to the oil feed, would inherently be capable of functioning as a steam superheater, depending on the relative feed temperatures of the incoming steam and oil streams, respectively. Note that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Additionally, Applicants assert the apparatus of Metrailer et al. differs from the instant invention in that, "Metrailer et al. disclose only a single continuous atomization passageway positioned concentrically about a central passageway [which]... wraps 360° around a central passageway." (page 6, lines 4-10). However, the Examiner respectfully disagrees. As emphasized above and restated presently, Metrailer et al. disclose, "At the terminal portion 35 of the passageway, the film is cut at an angle of about 90° by *one or more jets of stream* at a velocity of 250 ft./sec., thus shearing and atomizing the oil into relatively uniform fine droplets." (column 3, lines 3-6). Thus, in view of the one or more of jets of stream, the apparatus of Metrailer et al. inherently would comprise "a plurality of atomization fluid passageways... positioned concentrically about a perimeter of the central passageway," as recited in the claims.

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Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Betts et al. and Steffens are presented to illustrate the state of the art.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is 703-305-4951. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jennifer A. Leung

June 13, 2003

JAL

Hien Tran

**HIEN TRAN
PRIMARY EXAMINER**